The Diagram in Continuum: from inscription to generation of form in architecture

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ABSTRACT: The modern concept of the diagram has evolved in various disciplines and professions in terms of both inscriptive and performative mediums since the 1950's. As a powerful abstract concept, the diagram shows dichotomous characteristics; while the inscriptive mode of the diagram is seen as representational, concrete, and reductive, the performative mode of the diagram is seen as generative, abstract, and proliferative. This paper compares the production and the role of the diagram respectively in representative and generative mediums to give an insight into how diagrams embody these dichotomous modes. To do so, first, it studies the concept of the diagram in the works of two French philosophers: Bruno Latour and Gilles Deleuze. On the one hand, for Latour, the inscriptive aspect of the diagram becomes prominent as a tool to render scientific processes or objects onto an abstract representation, which acts as a concrete, irrefutable, and referential object. On the other hand, the Deleuzian concept of the diagram is not representational or visual at all, but it is still real. According to Deleuze, diagrams are sets of relations of forces that define virtuality of assemblages as a space of possibilities. The modern concept of diagrams in the realm of architecture has evolved in between this dichotomy. After giving insights into the contrasting concepts of the diagram, this paper studies three different approaches to the diagram in architectural praxes: Analytical diagram in Sejima's works, textual diagram in Eisenman's works, and material diagram in Spuybroek's works. This paper identifies these three praxes as intermediary stages in between Latour's and Deleuze's concepts of the diagram. In conclusion, it shows the dichotomy of the diagram as a continuum in architectural praxes, characterized at one end by the inscriptive mode and at the other end by the performative mode of the diagram.

KEYWORDS: Architecture, Diagram, Form, Representation, Generation

INTRODUCTION

Diagramming plays a prominent role as both a form of representation and a process in sciences, philosophy and design. Despite its significant position in each field, the discourse of diagram has been multivocal; every field re-defined the concept of the diagram to serve its own agenda. The abundance of different approaches to the diagram complicates its understanding and provides vague definitions. In his article "What is a Diagram anyway?", Anthony Vidler offers an overviewing answer to the crucial question. Vidler traces the meaning of the diagram step by step from open ended dictionary definition to the philosophical definition by Deleuze (Vidler 2006). The twenty-third volume of *Any* journal on "Diagram Work" provides a large collection of articles evaluating the concept of the diagram specifically in art and architecture. The contributors including Stan Allen, Robert Somol, Peter Eisenman, Manuel DeLanda, and Greg Lynn, emphasize the generative characteristics of the diagram from their own perspectives (Davidson 1998). In the more recent publication "The Diagrams of Architecture", editor Mark Garcia collects a larger variety of works on the diagram. Besides architectural concepts of the diagram, the reader offers various conceptual approaches to the diagram in other fields including sciences, art, landscape design and urban planning (Garcia 2010). According to Garcia, the problem with the broad definitions of the diagram is that "it dilutes the meaning of the term to the extent where it begins to decompose and collapse into even more general and unhelpfully vague concepts such as form, system, schema, space, structure, simulation, process, pattern, suggestion, analogy, influence and inspiration." (Garcia 2010, 23). Among all these conceptual differences, the gap between the definition of the diagram has never been larger than the one between the concepts of the diagram in sciences and that in philosophy. The conceptual difference of the diagram in sciences and in philosophy displays a dichotomous relationship. At the one end, sciences promote the inscriptive aspect of the diagram as a visual tool to render scientific processes or objects onto an abstract representation, which acts as a concrete, irrefutable, and referential object, at the other end, philosophy emphasizes the performative aspect of the diagram as an 'abstract

machine', which generates genuine creations. While the scientific concept of the diagram is physical, concrete, representative and inscriptive, the philosophical concept of the diagram is incorporeal, abstract, generative and performative (Fig. 1).
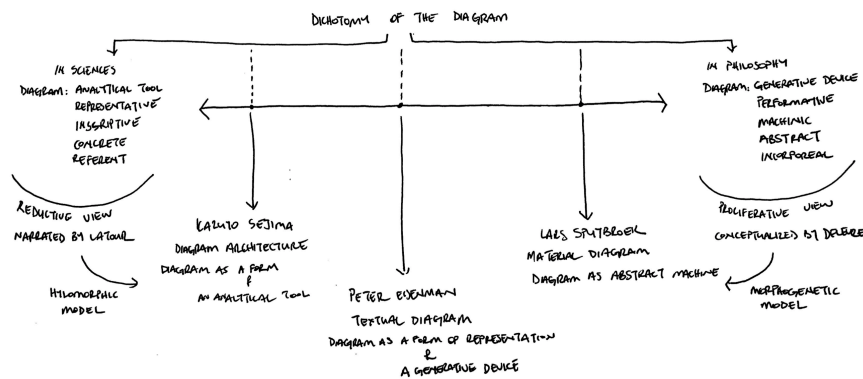
DICHOTOMY OF THE DIAGRAM

IN SCIENCES
DIAGRAM: ANALYTICAL TOOL
REPRESENTATIVE
INSCRIPTIVE
CONCRETE
REFERENT

REDUCTIVE VIEW
NARRATED BY LATOUR

HYLOMORPHIC
MODEL

KAZUYO SEJIMA
DIAGRAM ARCHITECTURE
DIAGRAM AS A FORM
OF
AN ANALYTICAL TOOL

PETER EISENMAN
TEXTUAL DIAGRAM
DIAGRAM AS A FORM OF REPRESENTATION
&
A GENERATIVE DEVICE

LARS SPUYBROEK
MATERIAL DIAGRAM
DIAGRAM AS ABSTRACT MACHINE

IN PHILOSOPHY
DIAGRAM: GENERATIVE DEVICE
PERFORMATIVE
MACHINIC
ABSTRACT
INCORPOREAL

PROLIFERATIVE VIEW
CONCEPTUALIZED BY DELEUZE

MORPHOGENETIC
MODEL

Figure 1: Diagram of dichotomy of the diagram. Source: (Author 2018)

The dichotomous characteristics of the diagram can be comprehended better in the works of two French philosophers: Bruno Latour and Gilles Deleuze. Latour, as one of the leading figures of science studies, describes the role of the diagram in scientific studies rather than offering his own theory or concept of the diagram. What is important for the purpose of this work is that in the article "Circulating Reference" Latour describes the diagram as an irrefutable scientific reference that represents dynamics of scientific objects. Latour narrates how the scientists constructed the diagram gradually through scientific process and claimed it as a concrete representation of their findings in an expedition in the Amazon Forest that he participated as an observer of science in action. Based on his observations during the expedition, the diagram, according to Latour, becomes a constructed visual representation of the dynamics of the Amazon Forest (Latour, 1999). On the other hand, the Deleuzian concept of diagrams is not representational or visual at all. According to Deleuze, diagrams are sets of relations of forces that define virtuality of assemblages as a space of possibilities. He identifies diagrams as abstract machines underlying actualized form. He argues that "the diagrammatic or abstract machine does not function to represent, even something real, but rather constructs a real that is yet to come" (Deleuze 2005, 142). Therefore, while the diagram in sciences becomes a concrete, constructed representation of the real, in philosophy the diagram itself becomes real and gains abstract, generative characteristics. Architecture, which benefits from both representational and generative characteristics of the diagram, produces its own approaches to the diagram influenced by the scientific and the philosophical concepts. While architecture utilize the diagram as a form of representation to rationalize its design decisions, it also conceives the diagram as a generative device to produce novel forms. But how does architecture manage to hold these two dichotomous modes concurrently?

This paper aims at giving insights into the diagrammatic concepts in architecture. It questions the ways that architecture utilizes both the representative and generative characters of the diagram. To answer this question, in the first part, it studies thoroughly the dichotomy of the diagram in sciences and philosophy through the works of Latour and Deleuze. After defining the two ends of the dichotomy, it seeks in-between positions that architecture benefits from both inscriptive and performative modes of the diagram. In this search, three main architects and their praxes become prominent: Kazuyo Sejima and her diagram architecture, Peter Eisenman and his textual diagrams, and, finally, Lars Spuybroek and his material diagrams. Because each of these three names takes a certain position in between the scientific and philosophical dichotomy of the diagram. Toyo Ito names Sejima's architecture as 'diagram architecture' in which "a building is ultimately the equivalent of the diagram of the space used to abstractedly describe the mundane activities presupposed by the structure" (Ito 1996, 18). There is a one to one correspondence between the diagram and the resultant form of Sejima's architecture. The representative character of the diagram gains significance as a tool for Sejima to generate her architecture. According to Eisenman the diagram is not only a form of representation but also a generative device. He conceives the diagram as a series of surfaces on which there are infinite possibilities to write and re-write. Thus, the diagram is constantly regenerated through multiple series of traces on every surface, however, the diagram still does not have an agency to generate by itself. It requires an external condition in the process as a generative or transformative agent. In the material experiments influenced by Frei Otto,

Spuybroek fully utilizes the generative agency of the diagram through its machining properties, which operate on both extensive and intensive properties of matter. His material diagrams produce form and structure during reconfiguring qualitative and quantitative properties of matter in flow (Spuybroek 2008). In the second part, this paper will focus on these three in-between diagrammatic approaches and define their positions in relation to two sides of the dichotomy. As a result of its investigation, this paper states that the dichotomy of the diagram should be seen as a continuum in architecture, characterized by the concrete, reductive, representative modes at the one end, and by the abstract, proliferative, generative modes at the other end.

1.0 DICHOTOMY OF THE DIAGRAM IN SCIENCE AND PHILOSOPY

1.1. Inscriptive mode of the diagram in science

The diagram has become prominent for the sciences not only as a representation tool to manage the scientific processes but also as a reference material to enhance the validity of the scientific findings. Hyungmin Pai claims that the diagram emerges within the scientific realm due to the clear subject-object dichotomy. He says, "the diagram emerged as a necessary mechanism for the subject to control its object of knowledge. The diagram is an essentially modern mode of representation" (Pai 2010, p.65). In the article 'Circulating Reference', Latour explains the ways that the scientific practice utilizes the diagram as a representation tool to control its object of study (Latour 1999). He joins a field trip to Amazon forest with the scientists whose aim is to find out whether the forest is advancing over savanna or it is retreating. Latour is not one of these scientists, in fact he is the observer of the scientists in action. His aim is not to observe the forest-savanna transition but rather to study the dynamics of the scientific practice. Throughout his observations the role of the diagram significantly stands out as the representation of the object of study in the scientific process. He states that "if a picture is worth a thousand words, a map, […]; it does not resemble anything. For Latour, "it does more than resemble. It takes the place of the original situation" (Latour 1999, 67). Without the pre-constructed map of the forest, it is not possible for scientists to handle the enormous scale and complexity of the forest.

According to Latour, the diagram is a constructed invention which allows discovery of unseen through conversion of the world into signs (Latour 2010, 67). The diagram is constructed by the scientists by transferring concrete world onto geometrical forms through marking and tracing. It is invented by the scientists, it would have never appeared without their efforts. It is a tool for discovery because it reveals what is not seen but known. Latour adds, "the diagram not only redistributes the temporal flux and inverts the hierarchical order of space, it reveals to us features that previously were invisible even though they were literally under the feet of our pedologists" (Latour 2010, 65). What enables such discovery is the abstract construction of the original situation through conversion of the concrete matter into geometrical forms by reducing complex networks into signs which is then compressed and marked on the diagram. By the help of the conventional coding of judgements, forms, tags, and words, the scientists construct the diagram as a referential material, through several stages. It carries out standardized way of representation. It acts as a concrete, irrefutable, and referential object. Here, Latour points out another significant aspect of the diagram to verify the validity of the scientific findings. The world is represented on a paper. It is still physical, and it is still as concrete as the original situation but it is not real, rather it is the representation of real.

1.2. Performative mode of the diagram in philosophy

Deleuzian concept of the diagram, which is heavily influenced by Bergson and Foucault, is central diagrammatic concept in philosophy. Unlike the concrete, physical, representative and inscriptive characteristics of the diagram in sciences, Deleuzian diagram has abstract, incorporeal, generative and performative characteristics. The diagram does not map or represent already existing structures or networks but it instrumentalizes organizational relationships that yet to be realized. Deleuze argues, "an abstract machine itself is not physical or corporeal, and more than it is semiotic, it is diagrammatic. It operates by matter, not by substance, by function, not by form. The diagrammatic or abstract machine does not function to represent, even something real, but rather construct a real that is yet to come, a new type of reality" (Deleuze 2005, 141). In Deleuzian concept the diagram is an abstract machine. According to him, the diagram has machinic characteristic to instrumentalize agencies in assemblages to generate new creations. It specifies the relationship between forces in virtual properties of matter, which are unrealized but still real. It operates through actualization of these virtual properties. The actualized form does not imitate the virtual. It is generated through differentiation whose rules are specified by the diagram. Thus, Deleuzian diagram operates not only in organizational level in which it maps the forces but also in generative level in which it machinize forces to actualize the virtual properties of matter.

Unlike the reductive concepts of the diagram, Deleuzian diagram does not need an external agency to initiate generation. The generative concept of the diagram acts on the intensive properties of the matter. Manuel DeLanda claims that, in Deleuzian philosophy of matter and form, "matter is already pregnant with morphogenetic capabilities, therefore capable of generating form on its own" (DeLanda 1998, 30) Matter itself is an active agent seeking for an order under topological transformations that allows variations of itself. DeLanda explains that the matter that enters into a diagram has only intensive properties in far-from-equilibrium state. The intensive forces in virtual form are in flow, and stabilization of these forces generates the actual form. However, the virtual properties do not disappear, the matter still possesses them. The differences in intensive properties would (re)activate the morphogenetic capacities of matter, and, in the equilibrium state, intensive differences would cancel themselves and actualize the final form. In contrast to the reductive view of the diagram, which always requires an external agent or pre-determined form to become real, Deleuzian diagram always generates novel forms by itself. DeLanda criticizes the hylomorphic view of the diagram as "if the future is already given in the past, if the future is merely that modality of time where previously determined possibilities become realized, then true innovation is impossible" (DeLanda 1998, 30) The strength of the Deleuzian concept of the diagram comes from its capacity to generate genuine forms.

2.0 THE DIAGRAM IN ARCHITECTURE

It has been showed that the concept of the diagram has evolved in two entirely different, if not contrasting, paradigms in sciences and philosophy. While the diagram is perceived as a tool for rationalization of the process and control of the object of study in sciences, it operates as abstract machines to map forces and to generate genuine creations in philosophy. Architecture, which articulates its concepts and creations through rationalizations, benefits from both paradigms. According to Somol the diagram in architecture is fully actualized when the fundamental technique and procedure of architectural knowledge has shifted from drawing to diagram in the second half of the 20th century (Somol 1999, 7). Stan Allen explains the double role of the diagram in architecture as "although diagrams can serve an explanatory function, clarifying form, structure, or program to the designers, and notations map program in time and space, the primary utility of the diagram is as an abstract means of thinking about organization" (Allen 1998, 16). How does architecture manage to control these two dichotomous functions of the diagram concurrently in a single design process? How does architecture link the inscriptive mode with the generative mode of the diagram without colliding two different paradigms? In order to answer these questions, this paper studies three significant diagrammatic praxes to seek for insights into how the means of the diagram are actualized in architectural practices through theories of the diagram. Firstly, it studies diagram architecture of Sejima where, first, the diagram becomes a tool to organize programmatic relations and then it turns into a form to generate the plan. Secondly, it studies textual diagrams of Eisenman, which is conceived as both a generative device and a form of representation. Lastly, it investigates material diagrams of Spuybroek whose generative characteristic is fully actualized through material experiments.

2.1. Analytical Diagram
The modern concept of the diagram has become prominent in the architectural practice since the twentieth century, because, as Stan Allen says, "diagrams are architecture's best means to engage the complexity of real" (Allen 1998, 17). It has been prominently an analytical visual tool for architects to specify relationship between activity and form, and to organize the distribution of architectural program. The diagram enables architecture to represent form and function in an abstract way. Antony Vidler claims that this aspect of the diagram placed the concept of the diagram in a privileged position in the development of modern architecture since it responds at once to "the aesthetics of Rationalism and the authority of Functionalism" (Vidler 2000, 9). Pai argues that "in modern architecture, the diagram has become form, and form has become a diagram" (Pai 2010, 74). Pai's statement recalls Toyo Ito's description of 'diagram architecture', which is an architecture that minimizes "the conversion of a diagram, one which describes how a multitude of functional conditions must be read in spatial terms, into an actual structure" (Ito 1996, 19). He calls Kazuyo Sejima's architecture as a diagram architecture in which "a building is ultimately the equivalent of the diagram of the space used to abstractedly describe the mundane activities presupposed by the structure" (Ito 1996, 18). Sejima brings a unique and simple approach to conversion from diagrammatic stage into architectural stage. For her, the diagram gradually transforms into an architectural plan. She produces spaces and spatial relations at the abstraction level of the diagram. The diagram inscribes architectural form as a necessary outcome of the requirements of the programme.
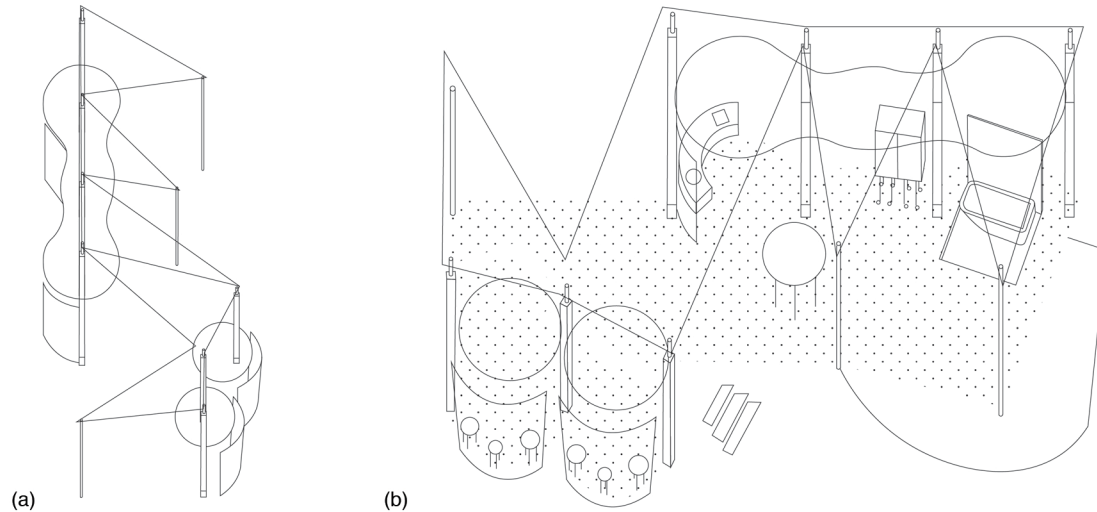
Figure 2: Kazuyo Sejima's diagrams for Platform II House; (a, b) spatial diagrams of the programmatic components. Source: (Images retraced by the author. Original drawings adapted from: "Conversation with Kazuyo Sejima". *El Croquis*, vol. 77. Madrid: EL Croquis, 1996, Image 4, p. 11)

In the conversation with Koji Taki, Sejima defines her design as a continuous process of discovery focused on two stages. In the first stage of the design, she determines the external elements of the project such as demands of the client, condition of the plot, and program. At this stage, she uses diagram as a mere tool to represent the relationships between external elements in abstract geometrical forms. In the second stage of the design, while she continues discovering different relationships between the elements, she visualizes the planning as well (Taki 1996, 6). Sejima produces the first schemes of the plan at these early stages. In the following stages, the structure takes its final form under the influence of the other external factors, which are beyond her control (Taki 1996, 6). In Sejima's architecture, the diagram becomes a translator between function and architectural plan. Ito summarizes Sejima's design process as "she arranges the functional conditions which the building is expected to hold, in a final diagram of space, then she immediately converts that scheme into reality" (Ito 1996, 20). He argues that Sejima's planning bases merely on the diagram of the space (Ito 1996, 20). As in the example of the design of Platform II house, Sejima's diagram of the spatial configuration of the programmatic elements reflects the deconstructivist expression of the final form of the building (Fig. 2). However, Sejima claims, the initial drawing is never actually converted into the structure in the same form as it appears on paper due to the specifications (Taki 1996, 7). The design is initiated by the diagram and then modified by other external factors. In Sejima's architecture, the diagram plays a representational role that inscribes its own form into an architectural form. Like the scientific approaches to the diagram, for Sejima, the diagram, first, performs as a tool to control the relationship between design elements, and then it turns into a physical entity composed of geometrical forms that inscribes the architectural form of the plan. The generative mode of the diagram remains unutilized for Sejima. The building is translated from its function plan through the conversion of diagrammatic form into architectural form.

2.2. Textual Diagram

While Sejima approaches to diagram as a mere inscriptive tool, Eisenman approaches to the diagram from both sides as a form of representation and a generative device. In his seminal essay "Diagram: An Original Scene of Writing", Eisenman influenced by Derrida studies the diagram in relation to text. For him, the diagram is capable of tracing and writing, hence it can be traced and read in architecture (Eisenman 1999). The Diagram becomes textual and performs as analytical and generative device in architecture. While forming his theory, he focuses on the moment when a scheme becomes a diagram and thus more than mere geometry. Unlike the formal resemblance between Sejima's diagram and architecture, Eisenman argues that "there is not necessarily a one-to-one correspondence between the diagram and the resultant form" (Eisenman 1999, 28). The diagram acts as an intermediary in the process of generation of an architecture. The diagram as a generator is not visible in the final form. He defines his approach to the diagram, "as a generative device in a process of design, the diagram is also a form of representation. But unlike traditional forms of representation, the diagram as a generator is a mediation between a palpable object, a real building, and what can be called architecture's interiority" (Eisenman 1999, 27).
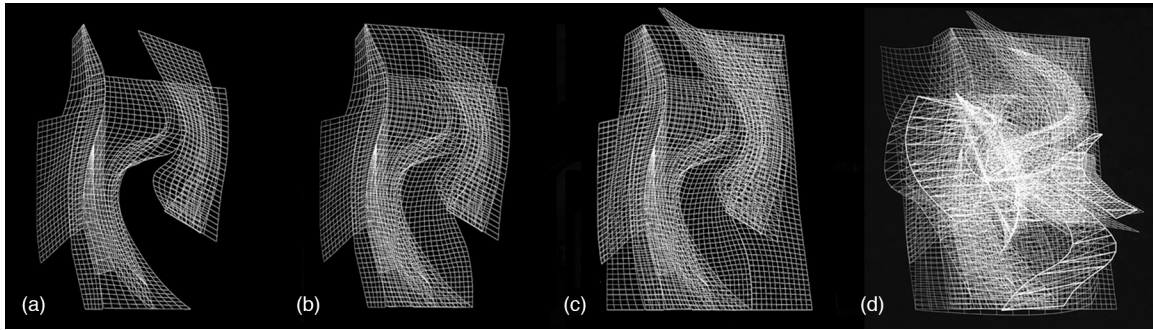
Figure 3: Eisenman's diagrams for Staten Island Institute for arts and Sciences; (a, b, c, d) transformation of grid layers. Source: (Eisenman Architects, New York, 1997-2001. Adapted from: http://www.eisenmanarchitects.com/staten-island.html (accessed March 29, 2018).)

Eisenman's theory of the diagram is heavily influenced by Deleuze as well as Derrida. Even though Derrida did not produce a significant work on the diagram, Eisenman interprets his texts on the mystical writing pad to form his own theory of the diagram. Eisenman asserts that the diagram performs in a similar manner with the mystical writing pad, which consists of multiple levels that allow infinite possibilities to write and re-write on the top surface while it keeps the previous traces on the bottom layer. Like the mystical writing pad, according to Eisenman, "the architectural diagram can be conceived of as a series of surfaces or layers which are both constantly regenerated and at the same time capable of retaining multiple series of traces" (Eisenman 1999, 33). Therefore, the forces can be traced in relation from one layer to another in the diagram like superimposed maps as in the example of Eisenman's Staten Island diagrams (Fig. 3). The conversion from diagrammatic stage to architectural stage is a question for Eisenman as well. Like Sejima's diagrams, his concept of the diagram does not have agency to generate architectural form either. According to Eisenman, in order to actualize the generative agency of the diagram, "an external condition is required in the process, something that will introduce a generative or transformative agent as a final layer in the diagrammatic strata" (Eisenman 1999, 35). The external agent, such as the specific site, the program or the history, can be conceived as another layer of a transparent pattern or screen, which blurs and reveals what has already been traced on the bottom layers. Thus, "the diagram does not generate in or of itself" (Eisenman 1999, 35). The diagram performs as an agency that proliferate a generative and transformative capacity of the design process.

2.3. Material Diagram

Lars Spuybroek criticizes Eisenman for seeing "the diagrammatic capacity of architecture too much as something linguistic, i.e. as metaphysical" (Spuybroek 2010, 280). He argues that in Eisenman's architecture the real has already happened and has always been consumed after the architecture processes it through language and presents its view to the users. Users only re-experience what has already foreseen in the diagram (Spuybroek 2010, 280). As opposed to textual conception of the diagram, Spuybroek advocated his generative view of the diagram for being more sensed and felt rather than read. He positions the diagram between "the-world-imagined and the-world-experienced" (Spuybroek 2010, 279). Spuybroek fully actualizes the generative capacity of the diagram through his material experiments. His philosophical view is heavily influenced by Deleuzian diagram, and his architectural practice is influenced by Frei Otto's material experiments. As Deleuzian philosophy suggests, Spuybroek's diagrams gain machinic properties to actualize the virtual forms through material experiments in which the matter is seen as active agents loaded with morphogenetic capacities. Otto's material experiments on light structures resonate with Spuybroek's material diagrams, which "produce form and structure during reconfiguration. They operate on extensities, and relate the action in space to the perception of space and the construction of space" (Spuybroek 2010, 276). In material diagram, as Kwinter explains, "the virtual is related to the actual, not by transposition - a becoming real - but by transformation through integration, organization, and coordination. The actual does not resemble the virtual; its rule is rather one of difference, innovation, or creation." (Kwinter 1998, 61). Unlike reductive theories of the diagram which always require an external body for creation, the material diagram operates on morphogenetic capacity of the matter through intensity differences. Spuybroek explains this abstract process, in which the intensity differences cease into an organizational singularity while generating actual structures, in two phases: convergence and divergence. Convergence is "a movement of virtualization, in which information is gathered, selected, graphed, or mapped and then organized into a virtual machine. A movement

towards quality, order, and organization" and divergence is "a movement of actualization, in which the organizational diagram germinates and becomes formative. A movement towards quantity, matter and structure." (Spuybroek 2010, 273)
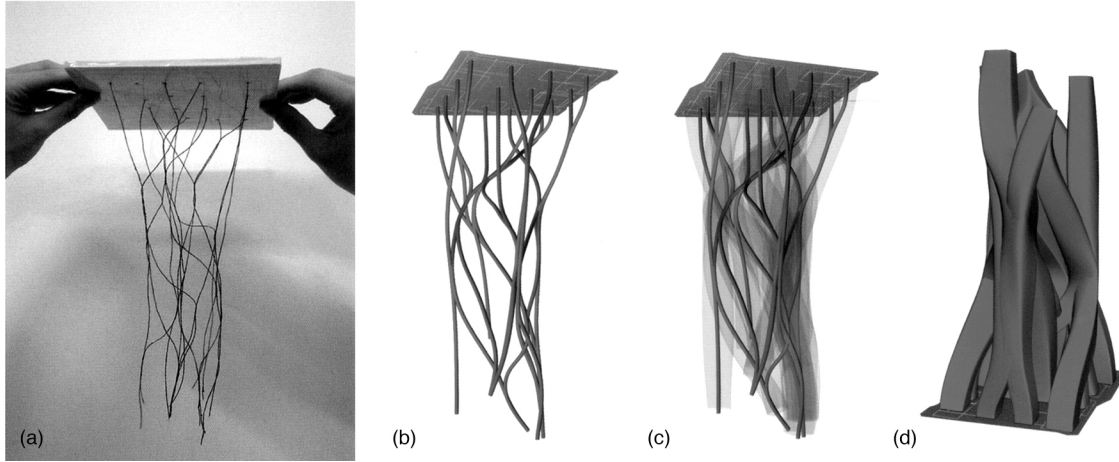

Figure 4: Spuybroek's material diagrams for World Trade Center; (a) wool thread machine out of the water, (b) digital model of the wool threads, (c) digital model of the thickened wool threads, and (d) digital mass model of the tower. Source: (NOX, Lars Spuybroek with Chris Seung-Woo Yoo and Kris Mun, New York, 2001. Adapted from: Lars Spuybroek, NOX: Machining Architecture, New York: Thames & Hudson, 2004, p. 261)

The question of how the convergence phase is connected with the divergence phase becomes the main focus of Spuybroek's material diagrams. They achieve such connection by setting up both phases as empirical machines whose procedures are regulated by organizational rules. Spuybroek lists four stages of machining in design: first stage is "to select a system and create a configuration for the machine based on this selection", the second one is "to mobilize the elements and relations in that system", the third one is where we need "a phase of consolidation to finally make the system" and the final stage results in "an architectural morphology" (Spuybroek 2010, 274). As in the example of Spuybroek's wet string tower diagram, which is inspired by Otto's wool thread diagrams, the strings in the configuration get mobilized by intensive and extensive forces when they are dipped in the water. When the configuration is transferred outside of the liquid medium, the forces acting on and in the strings, settles in and produces the final form (Fig. 4). As Kwinter points out, actualization inflects, combines, and separates elements and leaves nothing untransformed (Kwinter 1998, 23). For Spuybroek, the diagram as a whole is a system of relations in which if one relation changes, the rest changes as well. Spuybroek's material diagrams can be understood as "a continuous unfolding, a progressive differentiation, a gradual increase in information as object takes on form and grows" (Spuybroek 2010, 272). Therefore, Spuybroek offers a concept of diagram whose generative capacity comes from/within the material. Unlike the active role of architect in the diagram concepts of Sejima and Eisenman, architect plays a passive role in the generative process of material diagrams. Architect sets the machine and leaves the form production to the diagram.

CONCLUSION

The conceptual differences between the diagram in sciences and that in philosophy sets the two ends of the dichotomy. At the one end, the diagram is perceived as reduction, a visual tool for representation and inscription; at the other end, it is conceived as proliferation, an abstract machine for generation of genuine creations. Because of the broad definition of the diagram which somehow holds dichotomous approaches in itself, the meaning and the function of the term get ambiguous for several disciplines and professions. Architecture as one of them has produced several concepts and theories of the diagram. Berkel and Bos claims that architecture today approaches to the concept of diagram from a generative view rather than a reductive view. "Diagrams are best known and understood as reductive machines for compression of information. […] But diagrams can also be used as proliferating machines. This is how architecture today interprets their use, thus transforming diagram's conventional significance" (Berkel 1998, 20). This paper showed that even though the generative aspect of the diagram is central to architectural rhetoric, architecture today still benefits from both reductive and proliferative modes of the diagram. It states that the dichotomy of the diagram should be seen as a continuum in architecture where various in-between positions can be described. As Allen points out that while the reductive approaches provide the diagram an explanatory function

clarifying form, structure, or program to the designers, the proliferative approaches see the diagram as an abstract means of thinking about organizations (Allen 1998, 16). The diagram serves as both analytical and generative device in the design process. While for some architects the diagram becomes prominent as an analytical too, for some it operates more as a generative device rather than being a mere form of representation.

The three praxes studied in this paper approach to the diagram from conceptually and philosophically different perspectives. They define a gradual transition from one end of the dichotomy to the other. On the one side closer to the scientific view of the diagram, Sejima's design approach utilizes the diagram primarily as an analytical tool to organize the spatial and formal relationship between external forces, such as demands of the client, the site, and the program. There is a clear resemblance between the form of the diagram and the plan of the buildings designed by Sejima. On the other side closer to the philosophical view, the diagram is fully actualized as a generative device by Spuybroek through his material experiments. Unlike Sejima's design processes which are orchestrated by an external agent, Spuybroek's generative processes are actualized in and through the active matter by the machinic forces of the diagram. In the middle of the both view, Eisenman conceptualizes the diagram as a textual device, which functions as both an analytical and a generative tool. He sees the diagram as traces on layered transparent surfaces, on top of which there is infinite possibility to re-trace, re-draw and re-write. Even though, besides works of Sejima, Eisenman and Spuybroek, several other in-between theories and practices of the diagram can be pointed out in architecture, what makes these three significant is that they not only produce their own distinctive diagrammatic concepts but also become frequent references for diagrammatic literature. Sejima, Eisenman and Spuybroek take a certain diagrammatic position within the range of dichotomous modes of the diagram. This study shows that despite the certain dichotomous characteristics of the diagram, architecture achieved to hold concurrently both contrasting concepts of the diagram and utilize them for its own purpose of form generation. Therefore, it asserts that architecture sees the analytical and generative characteristics of the diagram as a continuum rather than a dichotomy.

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